

ADRIANA L. ALEJANDRO-OSORIO

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WORK ADDRESS:

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RESEARCH EXPERIENCE

2004 –PRESENT University of Wisconsin Madison, WI

Graduate Fellow, Department of Biomolecular Chemistry and Department of Genetics

Director: Dr. Audrey Gasch, Assistant Professor - Thesis Laboratory

Project: Role of Chromatin Remodeling on programming of the Environmental Stress Response in *Saccharomyces Cerevisiae*

- The work that I am currently carrying out in this laboratory will be used as requirement for my Ph.D. Degree. The investigation is directed towards the discovery of specific mechanisms that the budding yeast *S. Cerevisiae* uses to coordinate the precise change in genomic expression responding to stress. Specifically, I will use DNA microarray technology to find targets of two distinct chromatin remodeling proteins, Rsc9 and Rpd3, and how they regulate the coordinated expression program that changes the genes involved in the Environmental Stress Response (ESR). I will also use several computational biology techniques, including hierarchical clustering, to define the roles of these chromatin remodelers in the regulation of the ESR in yeast.

2003 – 2004 University of Wisconsin Madison, WI

Graduate Fellow, Department of Biomolecular Chemistry and Department of Oncology

Director: Dr. Peggy Farnham, Professor - Thesis Laboratory

Project: Mechanisms of Oct3/4 regulation of target genes in embryonic stem cells

- The work I carried out while in the Farnham lab focused on investigating the mechanisms by which transcription factor Oct3/4 regulates various genes in early embryonic stem cell development. Techniques that will be used in this project include DNA microarrays, stem cell technology, chromatin biochemistry as well as other molecular and cellular biology techniques in order to find the several targets of the expressed protein Oct3/4 in stem cell as well breast cancer cell lines MCF-10a, and contrast its role in the maintenance in pluripotency in stem cells and its potential role in the rapid proliferation characteristic of breast cancer cell lines.

2001-2003 University of Wisconsin Madison, WI

Graduate Fellow, Department of Biomolecular Chemistry and Department of Orthopedics and Rehabilitation

Director: Dr. Wilmot Valhmu, Assistant Professor – Masters Laboratory

Project: Mechanisms of regulation of aggrecan gene expression mediated by CREB in response to compressive load of chondrocytes

- The research that I carried out in this laboratory was part of my requirement for my Preliminary Examination. Research focused on identifying and understanding the mechanisms of aggrecan gene regulation. Data suggested that CREB may play a role in the regulation of aggrecan transcription in response to mechanical loading in chondrocytes. I used several mechanoloading techniques and investigated the presence of CREB in the CRE responsive elements in the aggrecan promoter, as well as the subsequent activation of the gene.

2000-2001 University of Wisconsin Madison, WI

Rotating Research Fellow at a Graduate Level, Department of Biomolecular Chemistry

Projects: During the first year of my graduate career, I rotated in 8 different laboratories. Some of the disciplines in which I worked ranged from biochemistry, genetics, developmental biology, molecular biology, cell biology, using models such as different mammalian cells (breast cancer, human primary cells), *X. Laevis*, *S. Cerevisiae*, and *C. Elegans*

1999-2000 Universidad de Puerto Rico Rio Piedras, PR

Undergraduate Research Assistant, Applied Biochemistry and Biotechnology Laboratory, Dept of Chemistry.

Director: Dr. Kai Griebenow, Assistant Professor, (now Associate Professor)

Project: Optimization of BSA micro-encapsulation in polymers by utilizing a strictly non-aqueous approach. – Senior Thesis Project.

- Utilized biophysical techniques along with Fourier Transform Infra Red Spectroscopy and Scanning Electron Microscopy to develop an optimized model for non-aqueous encapsulation of BSA in poly-lactic glycolic acid (PLGA) that allowed BSA to be delivered in a sustained-released manner and improved protein stability.

Summer 1999 Brown University Providence, RI
*Undergraduate Researcher, Leadership Alliance Alumni Program, Biochemistry-Oncology
Laboratory, Roger Williams Hospital*

Director: Dr. A. Raymond Frackelton, Professor

Project: Analyzed the effects of synchronization on breast cancer cell cycle regulation and dynamics using cell biology techniques.

- In this three month summer experience I learned cell biology techniques with emphasis on cell culture, transfection, and imaging. I also was exposed to various ethical concerns in science as part of the summer course required for integrants of this internship.

1999 (Spring Semester) Universidad de Puerto Rico Rio Piedras, PR
*Undergraduate Independent Research, Biochemistry-Orthopedic Laboratory, UPR Medical
Sciences Department*

Directors:

Dr. Onyx Reyes,

Dr. Marcel Nimni (co-director *Univ. of Southern California Los Angeles, CA*), Professor

Project: Analysis of collagen reorganization in cartilage post BMP treatment

- Research focused on examining collagen II content in canine knees after the implantation of growth factor scaffolds that release BMP to cartilage in the knee. The research also required my training in canine surgical techniques.

1997-1999 Universidad de Puerto Rico Rio Piedras, PR
Undergraduate Research Assistant, Bio-Organic Chemistry Laboratory, Dept. of Chemistry

Director: Dr. Reginald Morales, Professor

Project: Analysis of erythrocyte membranes with Phospholipase A₂.

In this lab, I carried out several experiments that probe the organization and dynamics of phospholipids on cell surfaces. Several experiments that I carried out with the help of Pablo Gonzales, a graduate student, aimed to find the distribution of different phospholipid species on the surface of intact erythrocytes

- Performed protein purification techniques, and other biochemical and organic assays, purifying the phospholipases from snake venoms.
- Isolated Phospholipase A₂ from two separate types of snake venom and characterized the kinetics of this enzyme on red blood cell membranes.
- Trained new students in protein purification techniques and kinetic assays.

Summer 1997 Universidad de Puerto Rico

Rio Piedras, PR

Undergraduate Research Assistant, Analytical Environment Laboratory, Dept. of Chemistry

Director : Dr. Osvaldo Rosario, Professor

Project: Analyzing airborne organic toxic particulates

- Used analytical techniques such as Mass Spectrometry, Gas Chromatography, High Performance Liquid Chromatography and Capillary Electrophoresis to analyze organic particulates present in a community in Puerto Rico that were hypothesized to induce toxic consequences in adolescent girls undergoing puberty.

PUBLICATIONS

- P. Provenzano, **A. L. Alejandro-Osorio**, W. Valhmu, R. Vanderby Jr., INTRINSIC FIBROBLAST MEDIATED REMODELING OF DAMAGED COLLAGENOUS MATRICES IN VIVO. In Press, Matrix Biology
- P. Provenzano, D. Martinez, K. Dwyer, **A. L. Alejandro-Osorio**, W. Valhmu, R. Grindeland, A. Vilas, R. Vanderby Jr, SYSTEMIC ADMINISTRATION OF INSULIN-LIKE GROWTH FACTOR-1 AND GROWTH HORMONE ENHANCES HEALING OF COLLAGEN EXTRACELLULAR MATRIX: EVALUATION OF LIGAMENT FROM LOADED AND UNLOADED RAT HINDLIMBS. Submitted.
- P. Provenzano, K. Dwyer, **A. L. Alejandro-Osorio**, W. Valhmu, C. Wade, R. Vanderby Jr, INCREASED CATHEPSIN K LEVELS DURING LIGAMENT DISUSE DEGRADATION. In review.

- W. Valhmu, D. Andreev and **A. L. Alejandro-Osorio**, DIFFERENTIAL REGULATION OF AGGRECAN GENE EXPRESSION BY MEK INHIBITORS: A NOVEL MECHANISM? *Trans. Orthop. Res. Soc.* **27**, 58.
- K. Carrasquillo, J. Carro, **A. L. Alejandro-Osorio**, D. Toro, K. Griebenow, REDUCTION OF STRUCTURAL PERTURBATIONS IN BOVINE SERUM ALBUMIN BY NON-AQUEOUS MICROENCAPSULATION. *J Pharm Pharmacol.* 2001 Jan;53(1):115-20

TEACHING EXPERIENCE

TEACHING ASSISTANT (T.A.), Organic Chemistry for Chemistry Majors, 1998-1999

Contributed to the course design, assisted students in learning course concepts, and held office hours to help students with homework assignments and exam preparation. Presentations

*Presenting Author

- September 2004 – Biomolecular Chemistry Seminar Series
University of Wisconsin - Madison
Oral Presentation
Title: RISKY BUSINESS: A NOVEL SUBUNIT OF THE RSC COMPLEX, RSC9, PLAYS A ROLE IN THE TRANSCRIPTIONAL RESPONSE TO STRESS.
Authors: **A. L. Alejandro-Osorio***, A. P. Gasch.
- March 2004 – Submitted to the 50th Annual Orthopedic Research Society Meeting
Moscone Center - San Francisco, CA
Poster Presentation
Title: GENE EXPRESSION PATTERNS FOLLOWING LIGAMENT SUBFAILURE INJURY IMPLY INCREASED COLLAGEN FIBRILLOGENESIS AND NON-SCAR MEDIATED INTRINSIC TISSUE REMODELING.
Authors: P. Provenzano*, **A. L. Alejandro-Osorio**, W. Valhmu, R. Vanderby.

- July 2003 – ASME Summer Bioengineering Conference
 Sonesta Beach Resort -Key Biscayne, FL
 Poster Presentation
 Title: ALTERED COLLAGEN mRNA LEVELS AFTER SUBFAILURE INJURY: REAL-TIME QUANTITATIVE PCR ANALYSIS.
 Authors: P. Provenzano*, W. Valhmu, **A. L. Alejandro-Osorio**, R. Vanderby.
- April 2003 – Molecular Biosciences Seminar Series
 Biotechnology Center, UW-Madison
 Oral Presentation
 Title: AGGRECAN REGULATION IN RESPONSE TO MECHANOTRANSDUCTION IS REGULATED VIA CREB.
 Authors: **A. L. Alejandro-Osorio***, W. Valhmu.
- February 2002 – 48th Annual Orthopedic Research Society Annual Meeting
 Adams Mark Convention Center, Dallas, TX.
 Podium Presentation
 Title: DIFFERENTIAL REGULATION OF AGGRECAN GENE EXPRESSION BY MEK INHIBITORS: A NOVEL MECHANISM?.
 Authors: W. Valhmu*, **A. L. Alejandro-Osorio**, D. Andreev.
- December 2001 – American Society of Cell Biology 41st Annual Meeting
 Washington DC Conference Center - Washington DC.
 Poster Presentation
 Title: CHARACTERIZATION OF THE ROLE OF MEK/ERK SIGNALING PATHWAY IN THE REGULATION OF AGGRECAN GENE EXPRESSION.
 Authors: **A. L. Alejandro-Osorio***, D. Andreev, W. Valhmu.

- September 2001 – Molecular Biosciences Seminar Series
 Biotechnology Center, UW-Madison
 Oral Presentation
 Title: SLUG AND DLX-3 PLAY A ROLE IN THE REGULATION OF
 AGGREGAN GENE TRANSCRIPTION.
 Authors: **A. L. Alejandro-Osorio***, D. Andreev, W. Valhmu.
- December 1999 – 5th Annual US-Japan Drug Delivery Symposium
 Westin Lahaina - Maui, HI
 Poster/Podium Presentation
 Title: ON THE ENCAPSULATION OF BOVINE SERUM ALBUMIN BY
 NON-AQUEOUS METHODS.
 Authors: **A. L. Alejandro-Osorio***, K. Carrasquillo*, K. Griebenow
- November 1999 – National Minority Research Symposium
 Crowne Plaza Hotel - Phoenix, AZ
 Poster Presentation
 Title: MICROENCAPSULATION OF BOVINE SERUM ALBUMIN BY A
 NON-AQUEOUS APPROACH.
 Authors: **A. L. Alejandro-Osorio***, K. Carrasquillo, K. Griebenow
- August 1999 – Brown University Summer Symposium
 Brown University - Providence, RI
 Poster Presentation
 Title: CELL CYCLE SYNCHRONY OF BREAST CANCER CELLS USING
 PHARMACOLOGICAL AGENTS
 Authors: **A. L. Alejandro-Osorio***, A. Raymond Frackelton

- July 1999 – The Leadership Alliance National Symposium
 IBM Conference Center - Palisades, NY
 Poster Presentation
 Title: CELL CYCLE SYNCHRONY OF BREAST CANCER CELLS BY SERUM DEPRIVATION.
 Authors: **A. L. Alejandro-Osorio***, A. Raymond Frackelton
- March 1999 – Alliance for Minority Participation (AMP)/Junior Technical Meeting
 Universidad de Puerto Rico – Mayaguez, PR
 Podium Presentation
 Title: KINETICS OF PHOSPHOLIPASE A₂ FROM *NAJA NIGRICOLIS*.
 Authors: I. Castro*, **A. L. Alejandro-Osorio**, P. Gonzales, R. Morales
- November 1998 –National Minority Research Symposium (NMRS)
 World Trade Center - NY, NY
 Poster Presentation
 Title: ENZYMATIC ACTIVITY OF PHOSPHOLIPASE A₂ ON THE ERYTHROCYTIC MEMBRANE
 Authors: **A. L. Alejandro-Osorio***, P. Gonzales, R. Morales
- March 1998 – Alliance for Minority Participation (AMP)/Junior Technical Meeting
 Universidad de Puerto Rico - Bayamon, Puerto Ric
 Podium Presentation
 Title: PURIFICATION AND CHARACTERIZATION OF A NEW PHOSPHOLIPASE A₂ FROM *NAJA NAJA ATRA*.
 Authors: **A. L. Alejandro-Osorio***, P. Gonzales, R. Morales

AWARDS, SCHOLARSHIPS

- ROTARY CLUB INTERACT AWARD – HIGH SCHOOL EXCELENC IN WRITING, 1994
- MINORITY ACCESS TO RESEARCH CAREERS PREPARATORY (PRE-MARC) HONORS SCHOLAR, 1997-1998
- MINORITY ACCESS TO RESEARCH CAREER (MARC) HONORS SCHOLAR, 1998-2000
- MINORITY BIOMEDICAL RESEARCH SCHOLAR (MBRS)/UNDERGRADUATE STUDENT TRAINING IN ACADEMIC RESEARCH (U*STAR) FELLOW, 1999-2000
- VILAS SCHOLARSHIP, 2000
- ADVANCED OPPORTUNITY FELLOWSHIP, 2000-2001, 2004-PRESENT
- NIH - MOLECULAR BIOSCIENCE TRAINING GRANT: Ruth L. Kirschstein National Service Award, 2001-2004

PROFESSIONAL SOCIETIES

- AMERICAN CHEMICAL SOCIETY, 1997-2001
- THE LEADERSHIP ALLIANCE, 1999-PRESENT
- AMERICAN WOMEN IN SCIENCE, 2002-PRESENT
- AMERICAN SOCIETY OF CELL BIOLOGY, 2001-PRESENT
- ORTHOPEDIC RESEARCH SOCIETY, 2001-2004
- AMERICAN SOCIETY OF MATRIX BIOLOGY, 2002-PRESENT

COMMUNITY/PROFESSIONAL SERVICE ACTIVITIES

- ALDO LEOPOLD ELEMENTARY SCHOOL READING VOLUNTEER,

2002-PRESENT

- UNIVERSITY OF WISCONSIN, MADISON – BIOTECHNOLOGY CENTER SCIENCE EXPEDITIONS VOLUNTEER, 2003-2004

EXTRAMURAL ACTIVITIES

- MT. ZION BAPTIST CHURCH MUSIC MINISTRY MEMBER (MUSICIAN), 2001-PRESENT
- MADISON COMMUNITY CHOIR MEMBER (MUSICIAN), 2002-PRESENT
- UNIVERSITY OF WISCONSIN, MADISON STRING ORCHESTRA MEMBER (MUSICIAN), 2003-2004

SKILLS

- **Computer Programs**

OMNIC, Sigma Plot, GRAMS, Cricketgraph, Basic, DNA Star; Microsoft Excel, Word, and Powerpoint; Adobe Illustrator and Photoshop; PrimerSelect, MegAlign, RasMol, DNA Stryder, Adobe Acrobat, Distiller, and Reader, among others.

- **Languages**

Fully fluent in Spanish, English, French and Dutch.

Partially fluent in German and Italian.

- **Hobbies**

I am a freelance musician and play the violin, flute and guitar. I regularly participate in a church music group and often play with various musical groups, choirs, as well as local and international artists.

REFERENCES

References are available upon request.

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